

***ABSTRACT***

A device with a stator having high performance flat coils is disclosed for increasing the operation efficiency and providing a correct number of winding in a coil which can cause a precise control of the inverse electromotive constant  $K_E$  of a motor or a generator so that a motor or a generator with a fixed volume can be designed to have a high rotary speed. The flat coil can be wound with a high volume occupying ratio so that the cross section of a flat coil is larger than that of the round coil so as to reduce the copper wire resistance. Therefore, the motor or generator using the flat coil has a higher operation efficiency and has a higher rated highest operation speed.